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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/770,258

02/02/2004

Ming-Szu Chan

10113711

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10/25/2006

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EXAMINER

CHEN, WEN YING PATTY

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 10/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/770,258

Applicant(s)

CHAN, MING-SZU

Examiner

W. Patty Chen

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7,9-14 and 20-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7,9-14 and 20-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

Applicant's Amendment filed Aug. 21, 2006 has been received and entered. Claims 1-6, 8 and 15-19 are cancelled per Amendment filed. Therefore, claims 7, 9-14 and 20-22 are now pending in the current application.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 7-10, 14 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf et al. (US 2002/0130985) in view of Nakatsuka (US 6208521).

With respect to claim 7 (Amended): Weindorf et al. disclose in Figure 1 a liquid crystal module comprising:

a body (such as the one shown in Figure 3, element 302); and

a circuit board (element 102, which corresponds to Figure 3's element 316) disposed on the body, comprising a substrate (Paragraph 0032) having a first side and a second side, a plurality of lead wires with a plurality of corresponding opposing openings formed on both sides of the substrate exposing the lead wires (Paragraph 0025, wherein signal wires are provided on the flexible circuit board and are exposed by the thermal vias, which are openings of the circuit board),

an LED (element 104) and a Zener diode (Paragraph 0025, wherein the Zener diode is part of the LED drive circuit as described in Paragraph 0048, which is placed directly beneath the LED) each coupled to the lead wires through the openings, wherein the LED is coupled to the lead wires through the openings on the first side, and a Zener diode coupled to the lead wires through the corresponding openings on the second side, wherein the LED and the Zener diode are oppositely disposed on the lead wires on the first side and the second side respectively (Paragraph 0025, wherein the Zener diode/control circuit is formed directly beneath the LED, and are connected through thermal vias, thus are connected through corresponding openings and are disposed oppositely of each other).

Weindorf et al. fail to specifically disclose that the lead wires are enclosed by the substrate such that a plurality of openings are formed in the substrate exposing the lead wires.

However, Nakatsuka disclose in Figure 1(b) a substrate (element 2) enclosing a plurality of lead wires (elements 4a-4c) and a plurality of openings (elements 6 and 7) in the substrate

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exposing the lead wires, such that semiconductor devices are able to be mounted and connected on either the same or opposite sides of the substrate (Column 6, lines 1-6).

Therefore, it would have been obvious at the time the invention was made to construct a liquid crystal module as taught by Weindorf et al. wherein a plurality of leads are enclosed by the substrate comprising of plurality of openings exposing the leads as taught by Nakatsuka, since Nakatsuka teach that such film carrier allows the forming of laminated structure of semiconductor parts with using only one single film carrier for connecting the semiconductor parts (Column 2, lines 35-47).

As to claim 9: Weindorf et al. further disclose in Paragraph 0039 that the Zener diode is coupled to the lead wires by welding (wherein the LED and the driving circuitry are soldered to the circuit board).

As to claim 10: Weindorf et al. further disclose that the body (such as the one shown in Figure 3, element 302) is rectangular.

With respect to claims 14 and 21 (Amended): Weindorf et al. disclose in Figure 1 a liquid crystal module comprising:

- a body (such as the one shown in Figure 3, element 302); and
- a circuit board (element 102, which corresponds to Figure 3's element 316) comprising:
  - an insulating substrate (Paragraph 0032) comprising a first side and a second side;
  - a plurality of lead wires with a plurality of openings formed on both sides of the substrate exposing the lead wires (Paragraph 0025, wherein signal wires are provided on the flexible circuit board and are exposed by the thermal vias, which are openings of the circuit board),

an LED (element 104); and

a Zener diode (Paragraph 0025, wherein the Zener diode is part of the LED drive circuit as described in Paragraph 0048, which is placed directly beneath the LED);

wherein a plurality of corresponding opposing openings are provided in the first and second sides of the insulating substrate exposing the lead wires (Paragraph 0025, wherein signal wires are provided on the flexible circuit board and are exposed by the thermal vias, which are openings of the circuit board), and the LED and Zener diode are each coupled to the lead wires through the openings, wherein the LED is coupled to the lead wires through the openings on the first side and the Zener diode is coupled to the lead wires through the corresponding openings on the second side opposite to the LED (Paragraph 0025, wherein the Zener diode/control circuit is formed directly beneath the LED, and are connected through thermal vias, thus are connected through corresponding openings and are disposed oppositely of each other).

Weindorf et al. fail to specifically disclose that the lead wires are enclosed by the substrate such that a plurality of openings are formed in the substrate exposing the lead wires.

However, Nakatsuka disclose in Figure 1(b) a substrate (element 2) enclosing a plurality of lead wires include at least a first lead wire and a second lead wire (elements 4a-4c) and a plurality of openings (elements 6 and 7) in the substrate exposing the lead wires, such that semiconductor devices are able to be mounted and connected on either the same or opposite sides of the substrate (Column 6, lines 1-6).

Therefore, it would have been obvious at the time the invention was made to construct a liquid crystal module as taught by Weindorf et al. wherein a plurality of leads are enclosed by the substrate comprising of plurality of openings exposing the leads as taught by Nakatsuka, since

Nakatsuka teach that such film carrier allows the forming of laminated structure of semiconductor parts with using only one single film carrier for connecting the semiconductor parts (Column 2, lines 35-47).

As to claim 20: Weindorf et al. further disclose in Figures 1 and 4 and Paragraph 0026 that the liquid crystal module includes a port (element 122, the control source), wherein the lead wires connect the LED and Zener diode to the port.

As to claim 22: Nakatsuka further disclose in Figure 1(b) that the first and second lead wires (elements 4a, 4b, 4c) extend in a direction parallel to a top or bottom surface of the substrate (element 2).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf et al. (US 2002/0130985) and Nakatsuka (US 6208521) in view of Mizuno (US 6398560).

Weindorf et al. and Nakatsuka disclose all of the limitations set forth in the previous claims, but fail to specify that the liquid crystal module body be made of plastic.

However, Mizuno discloses in Figure 11 a circuit board (element 26) disposed on a body (element 14), wherein the body is made of plastic (Column 7, line 56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to construct a liquid crystal module as taught by Weindorf et al. and Nakatsuka with the plastic body taught by Mizuno, since Mizuno teaches that by using a plastic body, it has an easiness in forming or shaping or mechanical processing (Column 7, lines 56-58).

Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weindorf et al. (US 2002/0130985) and Nakatsuka (US 6208521) in view of Kakuguchi et al. (US 2004/0254001).

Weindorf et al. and Nakatsuka disclose all of the limitations set forth in the previous claims, but fail to specify that the liquid crystal module can be used as a display of a mobile phone or a display of a personal digital assistant.

However, Kakuguchi et al. disclose in Figure 1 a liquid crystal display screen (element 21), which is used on a mobile phone and further teach that the same liquid crystal display screen can also be used on a personal digital assistant (Paragraph 0072).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the LCD module taught by Weindorf et al. and Nakatsuka into the electronic devices taught by Kakuguchi et al. so that having a liquid crystal display screen on a mobile phone or on a personal digital assistant would make it more convenient for the user to view the data within.

### ***Response to Arguments***

Applicant's arguments filed on Aug. 21, 2006 have been fully considered but they are not persuasive.

Applicant argues that the rejection of claims 7 and 14 are made in view of two different embodiments of Weindorf, however, the Examiner disagrees. The Examiner merely referred to Figure 3 of Weindorf for the backlight structure, wherein one of ordinary skilled in the art would have the knowledge of positioning the circuit board as shown in Figure 1 into the backlight



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device as shown in Figure 3 since one of ordinary skilled in the art would have the knowledge of using the circuit board in a backlight system. Further, Weindorf clearly stated in Paragraphs 0020 and 0021 that the circuit boards disclosed in the prior art are to be incorporated into a backlight system.

Therefore, although in Figure 3 the backlight system uses the circuit board as shown in Figure 2 (which is a different embodiment), however, one of ordinary skilled in the art would have the knowledge to replace the circuit board with the one as shown in Figure 1.

Regarding the Nakatsuka references, Applicant argues that there is no suggestion or motivation to combine the Nakatsuka reference with Weindorf, and that the only suggestion or motivation to make such a combination comes from Applicant's own disclosure.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant further argues that Nakatsuka's disclose is unrelated and non-analogous to a flexible backlighting LED structure, that there is no discussion of an LCD module, an LED, or a Zener diode in Nakatsuka, nor is there any teaching or suggestion as to how or why a mounting structure for semiconductor elements such as that described by Nakatsuka would be applied to an LCD module.

In response to applicant's argument that Nakatsuka is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Nakatsuka discloses a circuit board for mounting semiconductor elements and Weindorf discloses an LCD system which uses circuit boards for mounting an LED and a Zener diode. Therefore, it would have been obvious to one of ordinary skill in the art to use the circuit board as disclosed by Nakatsuka in the LCD device as disclosed in Weindorf since Weindorf does disclose the use of circuit boards.

Applicant further argues that none of the openings disclosed by Nakatsuka are corresponding opposing openings, and that none of the connection parts are opposite each other.

However, the Examiner maintains, it is clearly shown in Figure 1(b) of Nakatsuka that openings are formed on opposite sides of the substrate and that when semiconductor elements are mounted through the openings on opposite sides and are connected to each other through the leads, thus, one opening in which a semiconductor element is mounted thereon would correspond to another opening on the opposite side in which another semiconductor element is mounted thereon, since the semiconductor elements are electrically connected to each other.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. Patty Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner  
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PRIMARY EXAMINER